REMARKS

This Amendment is responsive to the Office Action dated January 26, 2010. Claims 1-4 were pending. Although Applicants do not agree with each of the Examiner's rejections and each of the Examiner's assertions regarding what the cited references show or teach, Applicants have canceled claims 1 and 2 herein to expedite prosecution of the present application without prejudice to the presentation or assertion, in the future, of claims relating to the same or similar subject matter of the canceled claims. With this amendment claims 3 and 4 are pending in the application. Applicants request reconsideration of the present application in view of the foregoing amendments and the following remarks.

Claim Rejections

Claims 3 and 4 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,959,330 to Donahue (hereinafter "Donahue") in view of non-patent literature "Terpinyl Acetate" Material Data Sheet, and in further view of a machine translation of JP 09-124774 to Kobayashi (hereinafter "Kobayashi"). Applicants respectfully traverse these rejections.

Claim 3 recites, *inter alia*, "printing a dielectric paste including ethyl cellulose having an apparent weight average molecular weight of 110,000 to 190,000 as a binder and at least one kind of solvent selected from the group consisting of isobornyl acetate, α-terpinyl acetate, I-dihydrocarvyl acetate, I-menthyl acetate, I-menthone, I-perillyl acetate and I-carvyl acetate on a ceramic green sheet containing a butyral system resin as a binder in a predetermined pattern, thereby forming a spacer layer, the degree of polymerization of the butyral system resin is equal to or larger than 1000, the degree of butyralization of the butyral system resin being equal to or larger than 64 mol % and equal to or smaller than 78 mol %." The cited references do not singly, or in any motivated combination, teach or suggest such features.

The Office Action points to Donahue as disclosing printing a dielectric paste (or thick film) containing among other things, a solvent and various polymeric binders, including an ethyl cellulose binder. See Office Action, page 4. While this statement may be accurate, Donahue fails to disclose (i) printing a dielectric paste including ethyl cellulose having an

apparent weight average molecular weight of 110,000 to 190,000 as a binder, (ii) the dielectric paste including at least one kind of solvent selected from the group consisting of isobornyl acetate, α-terpinyl acetate, I-dihydrocarvyl acetate, I-menthyl acetate, I-menthone, I-perillyl acetate and I-carvyl acetate, and (iii) printing dielectric paste on a ceramic green sheet containing a butyral system resin, the degree of polymerization of the butyral system resin being equal to or larger than 1000, and the degree of butyralization of the butyral system resin being equal to or larger than 64 mol % and equal to or smaller than 78 mol %. Furthermore, neither the non-patent literature cited in the Office Action nor Kobayashi cure these deficiencies of Donahue.

For example, with respect to the claimed limitation of the apparent weight average molecular weight of the ethyl cellulose binder, the Examiner opines that this limitation can be inferred from the disclosure of "other binders" in Donahue for making green tapes (which are distinct from the thick film pastes disclosed in Donahue) having a weight average molecular weight in a range largely outside of the claimed range of 110,000 to 190,000. See Office Action, page 5. Applicants strongly disagree.

The Examiner continues with the conclusory statement that the claimed range can be obtained via routine experimentation without any explanation as to how the disclosure of a largely different range (*i.e.*, 150,000 to 300,000) for the weight average molecular weight of "other binders" for a green tape component would teach or motivate one skilled in the art to discover or arrive at the apparent weight average molecular weight range recited in claim 3 for a ethyl cellulose binder of a dielectric paste. The Examiner is modifying the disclosure of Donahue by shifting the disclosed range and attributing it to an ethyl cellulose binder of a dielectric paste, which is impermissible use of hindsight using Applicants' disclosure as a blueprint. Donahue fails to teach or suggest the aforementioned limitation related to the apparent weight average molecular weight of the ethyl cellulose binder. The non-patent literature cited in the Office Action and Kobayashi likewise fail to teach or suggest the aforementioned limitation, and so do not cure the deficiency of Donahue in this regard. Accordingly, claim 3 is allowable over the cited references for at least this reason.

With respect to the claimed limitation of a dielectric paste including at least one kind of solvent selected from the group consisting of isobornyl acetate, α-terpinyl acetate, I-

dihydrocarvyl acetate, I-menthyl acetate, I-menthone, I-perillyl acetate and I-carvyl acetate, the Office Action asserts that Donahue teaches that any conventional solvent having a boiling point of 130-350 degrees Celsius is useful for forming a dielectric paste, and that since terpinyl acetate is a solvent having a boiling point of 209 degrees (according to the non-patent literature) it would be obvious to employ the claimed solvent with a reasonable expectation of success. See Office Action, page 3. Applicants respectfully disagree. First, Donahue does not state that any conventional solvent having a boiling point of 130-350 degrees Celsius is useful for forming a dielectric paste. Rather, it states that the organic medium for most thick film compositions is typically a solution of resin in a solvent and that "[t]he solvents usually boil within a range of 130-350 degrees Celsius." Donahue, column 5, lines 21-26. Donahue then recites a laundry list of suitable solvents, none of which are the solvents recited in claim 3. Donahue, column 5, lines 27-32. Donahue goes on to state that a preferred vehicle for thick film applications includes the solvent β-terpineol. See Donahue, column 5, lines 39-41. As explained in the present application, the solvent terpineol (which is a highly popular solvent for a dielectric paste) dissolves the binder in a ceramic green sheet formed using a butyral system resin when printed thereon and thereby causes voids, fissures or wrinkles in a resultant multi-layered ceramic electrical component. Donahue explicitly discloses the use of a preferred solvent which Applicants have disclosed as causing voids, fissures or wrinkles – a direct contradiction to the problems to be solved by the present invention (*i.e.*, preventing voids, fissures and wrinkles in multi-layered ceramic electronic components). In sum, Donahue fails to refer to any of the claimed solvents and instead teaches away from the present invention by indicating that β-terpineol is a preferred solvent. For at least these additional reasons, Donahue fails to teach or suggest the aforementioned limitation related to the kind of solvent of the dielectric paste. The non-patent literature cited in the Office Action and Kobayashi likewise fail to teach or suggest the aforementioned limitation, and so do not cure the deficiency of Donahue in this regard. Accordingly, claim 3 is allowable over the cited references for at least this additional reason.

With respect to the claimed limitation of printing on a ceramic green sheet containing a butyral system resin, the degree of polymerization of the butyral system resin being equal to or larger than 1000, and the degree of butyralization of the butyral system resin being

equal to or larger than 64 mol % and equal to or smaller than 78 mol %, the Office Action admits that Donahue fails to disclose a ceramic green sheet containing a butyral system resin having the aforementioned claim properties. See Office Action, page 5. As such, the Office Action points to Kobayashi and the use of polyvinyl butyral resin as a constituent of an anisotropically conductive film having a degree of polymerization of 1,500 to 2,500 and a degree of at least 65 mol % (which overlaps with the properties recited in claim 3) and asserts that it would be obvious to use the polyvinyl butyral resin of Kobayashi to obtain desired properties useful for films. See Office Action, page 5. Applicants respectfully disagree. An anisotropic conductive film is an interconnect system commonly used in Liquid Crystal Display (LCD) manufacturing to make electrical and mechanical connections from the driver electronics to the glass substrates of the LCD. The technical field to which the anisotropic conductive film of Kobayashi belongs is thus quite different from that of the claimed invention. Consequently, one of ordinary skill in the art of multi-layered ceramic electronic components would not look to Kobayashi to formulate a ceramic green sheet having the claimed properties recited in claim 3. Accordingly, claim 3 is allowable over the cited references for at least this additional reason.

Conclusion

Overall, the cited references do not singly, or in any motivated combination, teach or suggest the claimed features of the embodiment recited in independent claim 3 and thus claim 3 is allowable. Because claim 4 depends from allowable independent claim 3 and also because it includes additional limitations, claim 3 is likewise allowable.

In light of the above amendments and remarks, Applicants respectfully submit that all pending claims are allowable. If questions remain, the Examiner is invited to contact applicants' representative, Jared M. Barrett, by email at JaredB.docketing@SeedIP.com or by telephone at (206) 622-4900.

The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

Respectfully submitted,

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